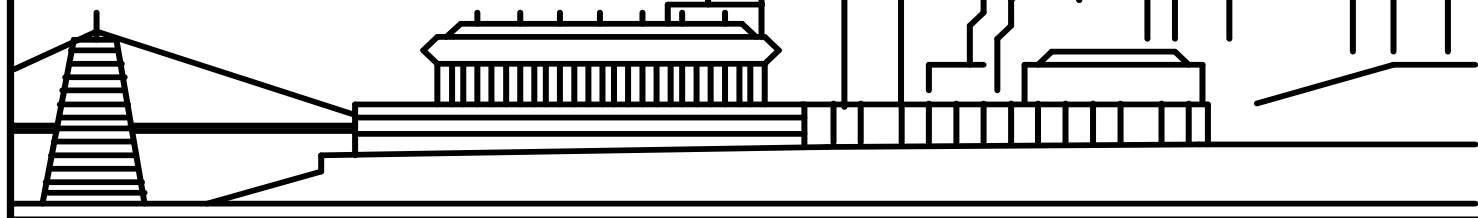




INSTITUTE OF
ELECTRICAL &
ELECTRONICS
ENGINEERS, INC.



JANUARY 1996

IEEE CINCINNATI SECTION NEWSLETTER

Chairman's Message

By Steve Olenick

Congratulations to our newly elected Member-At-Large, Eric Wright.

Dick Reiman, a long-time devoted member of the executive committee has decided to pass his duties on to a younger member. However, he will continue to write his historical column for the newsletter. We will miss his valuable contributions to the Section. Dick, thanks for a job well done.

I need to apologize to a number of members who contacted me to which I have not responded to as quickly as I would have liked. I am slowly working my way through my E-mails and voice mails.

If you have any suggestions for technical meetings, please contact me at 510-573-6555 or e-mail me at SOLENICK@CINELE.COM.

Until next time...

BROADCAST VIDEO RECORDERS

by R. J.. Reiman, Historian

The recording of video signals on magnetic tape is today such an integral part of television that it is hard to imagine a broadcasting system with out it. Uses include prerecorded programs, reruns, instant replays, news and network time delay, all of high quality. Before magnetic tape methods, recordings depended upon photographing of television images, which had serious cumulative degradations of the picture signal as it was processed and transmitted due to signal-to-noise ratio. The techniques also were too slow. With magnetic tape, the video remains in electrical form from camera to receiver.

RCA, the leader in research in 1950, investigated ultra-sensitive film to improve picture quality. Color television was David Sarnoff's main goal, and the recorder was to record color, not monochrome as a first step, a very difficult task. When this failed to solve the problem, Harry F. Olson tried a magnetic method using a Longitudinal Recorder with the tape pulled past a fixed record and playback head. The speeds required led to timing instability (wow and flutter), and non-linearity with the video signal being recorded directly on tape. Peter Goldmark of CBS tried photographic recording with the film exposed by scanning it with an electron beam. Both RCA and CBS were unsuccessful.

Enter Ampex, a small company founded by a Russian immigrant, Alexander M. Poniatoff. Charles P. Ginsburg, with a team of six engineers who were open-minded, were willing to review the literature of others in the field, and were not inhibited on what "didn't work before." Included in the team were Ray M. Dolby, who later developed the Dolby noise-reduction system, Charles E. Anderson who urged the use of FM, Shelby Henderson who was a skilled model maker, Alex Maxey, who developed the variable-position tape guide, and Fred Pfrost, who designed the recorder / playback heads.

They concentrated on a practical device, and were content to first record monochrome video. They also had good luck, including the recent development of mylar tape with its proper degree of elasticity.

The problems of high head-to-tape speed and timing stability were solved by mounting the recording heads on a rim of a rapidly rotating headwheel (see Fig. 1), and pulling the film past the headwheel so that the head is moved past the tape. Timing stability was thereby achieved. The problem of recording linearity was solved by the use of vestigial sideband FM instead of AM. A variable-position adjustable tape guide (Fig. 2) held the tape in contact with the headwheel and overcoming the "venetian blind" effect.

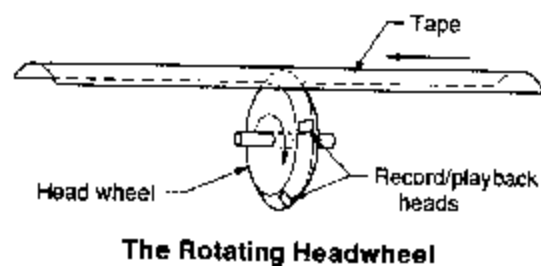


Fig. 1 - The Rotating Headwheel

Four Record/playback heads are mounted on the V-shaped rim of a two-inch headwheel. The two-inch tape is partially wrapped around the rim and is pulled past it at a speed of 15 ips as the wheel rotates at 14,400 rpm. The recorded tracks are transverse to the tape.

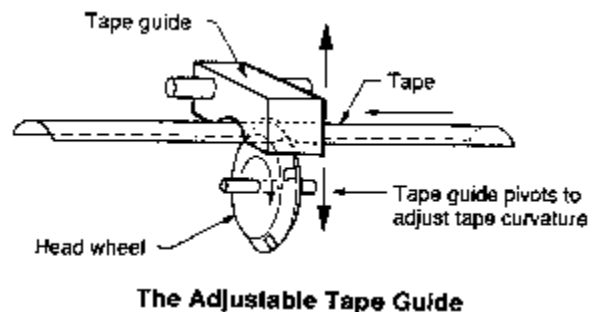


Fig. 2 - The Adjustable Tape Guide

The vacuum block tape guide holds the tape in contact with the headwheel. By pushing it upward, the stretch of the tape can be controlled, thus matching the dimensions of the tape and wheel and eliminating the venetian blind effect. It was fortunate that the Mylar tape base, which had just been developed, had the proper degree of elasticity.

On April 14, 1956, the Ampex recorder was demonstrated to CBS and ABC, but not NBC (or rival RCA), and was an immediate success. Ampex went on to dominate the field until 1960, when RCA developed a transistor video recorder, then went on under A.H. Lind to invent the color recorder.

A MESSAGE FROM YOUR PACE CHAIRMAN

by Bill Lohner

"A Network of Professional Activities for Engineers"

As a follow-up to the PACE Chairman's message in the November/December issue of our IEEE Newsletter, I have requested funds from Region 2 PACE to bring a PACE representative to Cincinnati to talk about PACE resources and how they can be helpful to the local IEEE membership. I have not yet scheduled the meeting, but I am looking at April 25th or May 23rd. The presentation would be at IAMS in Bond Hill.

I would like some suggestions from Section members as to what subject matter would be most helpful. The meeting need not be necessarily limited to one topic. As I have mentioned in previous columns, topics can be Employee Assistance, Consultant Engineering Networks, job postings, pensions, medical insurance, etc.

All of us who receive the Cincinnati Section Newsletter pay dues to the IEEE. I am sure we receive technical support from the IEEE in the form of technical meetings, committees, technical publications, etc. The IEEE, however, through PACE, does offer other beneficial services to its members which we pay for with our dues. We need to know how to tap and use these services and support IEEE programs and lobbying which are for our benefit.

Some of the areas in which PACE is actively working are IEEE organizational improvements, immigration reform, electronic communications, job security and recruiting new IEEE members. In response to employee based immigration, members of IEEE-USA's Competitiveness Policy and Work Force Committees have proposed amendments to our position statement, "Alien Engineers, Foreign Students and Our National Engineering Resource". IEEE-USA has also increased communications to lawmakers on this issue.

IEEE-USA has encouraged members to write to their congressional representatives in support of research and development funding and Individual Retirement Account expansion.

So again, I am requesting input from our Cincinnati Section membership. I would feed this input to the PACE speaker I plan to obtain so he can address your concerns.

William J. Lohner
PACE Chairman
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IN NEXT MONTH'S ISSUE:

**DETAILS ON THE ENGINEERS AND SCIENTISTS OF CINCINNATI'S 61st ANNUAL MEETING
TO BE HELD FEBRUARY 22, 1996!!!**

PLEASE - PLAN TO ATTEND!!!!!!

IEEE NEWS

IEEE NAMES ANTHONY J. FERRARO STAFF EXECUTIVE FOR PUBLICATIONS

Piscataway, NJ, August 7, 1995 -- Anthony J. Ferraro has joined IEEE as Staff Executive for Publications. He succeeds Phyllis Hall who will retire from the IEEE on September 8.

"New electronic methods to disseminate the Institute's many journals, magazines, proceedings and other publications are our future. They are also a significant part of our goal to serve members and customers in a quality manner," stated Richard D. Schwartz, IEEE acting general manager. "Tony Ferraro's many years of electronic publishing and management experience will help the IEEE to expand the electronic publishing programs begun during Phyllis Hall's five years with the Institute."

Schwartz noted that the IEEE publishes more than 25% of the world's annual output of material on electrotechnology. In recent years, the Institute has greatly broadened its electronic publishing capabilities. This includes the new IEEE Electronic Library, a CD-ROM product introduced in June.

Ferraro was most recently president, U.S. Operations, AND Software, Inc. Previously, he was vice president of Electronic Publishing at BPI Communications, publisher of Billboard, the Hollywood Reporter, Adweek, trade journals and books, where he established the Electronic Publishing group. He also has been publisher for the Electronic Publishing Group at Reed Publishing, U.S.A., and vice president of new business development at R.R. Bowker Company.

Anthony Ferraro holds a Bachelor of Arts from City College of New York, and a Masters in business administration from Iona College, New Rochelle, NY. He received a Purple Heart and a Bronze Star while serving in the U.S. Army in Vietnam. He resides in Eastchester, New York, with his wife Elaine and their two children.

HITACHI LTD. PRESENTS 20 MILLION YEN GIFT TO IEEE COMPUTER SOCIETY

Washington, D.C., September 14, 1995 -- Hitachi Ltd. has presented the IEEE Computer Society with an endowment of 20,000,000 yen, (U.S. \$200,000 - based on 100 yen per \$). The gift, the largest monetary donation ever given to the Computer Society, will be used to fund the new Tsutomu Kanai Award, named in honor of Hitachi's current president.

"Every year the Kanai Award will recognize an individual who has made exceptional contributions in the general area of distributed computing systems -- an area of technology that Hitachi believes is critical to future progress," said Dr. Ronald G. Hoelzman, president of the IEEE Computer Society. "We greatly appreciate that Hitachi, with its exceptional history of technical innovation and leadership, has given this generous gift to the Computer Society."

Hoelzman said details of the Kanai Award are currently being finalized, and that the nomination process will begin later this year. The first Kanai Award will be presented at a Computer Society-sponsored conference that is related to distributed computing research. The award will consist of a medal, illuminated certificate, honorarium, and research and travel support, with a total value of approximately US\$20,000.

"Hitachi believes that the worldwide prominence and scope of the Computer Society will help make this award truly international," said Dr. Yasutsugu Takeda, senior managing director of Hitachi Research & Development. "I hope the Kanai Award will encourage engineers and scientists to continue important research upon which future successes in new generation computing systems and distributed computing systems depend."

Distributed computing systems connect multiple computers to work simultaneously on different aspects of the same problem or process. The computers are interconnected through networks or data switches and may be at one or several locations. The Kanai Award will recognize significant achievements relating to both practical and theoretical advances in distributed computing.

A native of Kyoto, Tsutomu Kanai received both his B.S. and Ph.D. in Mechanical Engineering from Tokyo University. He joined Hitachi in 1958 as a researcher developing nuclear reactors. During his career, he progressed through increasingly important management positions in Hitachi's Power Group. In June 1991, he was elected president of Hitachi Ltd. Dr. Kanai's versatile career as a scientist and an engineer, and as a designer and a manager has led him to advocate distributed computing and the new generation of computers.

Hitachi Ltd., headquartered in Tokyo, reported sales of \$85 billion for the fiscal year ended March 31, 1995. Hitachi currently ranks 13th on Fortune magazine's list of the world's 500 largest companies.

With about 100,000 members, the IEEE Computer Society is the world's largest association of computer professionals, and the largest constituent society of IEEE. The Computer Society publishes 18 periodicals and sponsors more than 100 conferences throughout the world each year. The IEEE Computer Society Press publishes more than 130 titles annually.

In addition to its headquarters in Washington, D.C., the society maintains a publications office in Los Alamitos, Calif., a European office in Brussels, and an Asia Pacific office in Tokyo.

IEEE NAMES DANIEL SENESE TO BE GENERAL MANAGER

Piscataway, NJ, September 18, 1995 -- Daniel J. Senese has been named General Manager of the IEEE effective Monday, September 25. He will join the Institute from Bellcore, where he most recently was Vice President, Quality.

He will succeed John H. Powers, who resigned in November, 1994.

"For the initial period, Mr. Senese will work closely with our Acting General Manager, Richard Schwartz, to ensure a smooth, efficient transition in the overall management of our operations and activities as the world's largest technical professional society," stated IEEE President James T. (Tom) Cain.

He said that Mr. Schwartz, who had been Staff Executive for Business Administration, will resume his prior responsibilities. In his announcement to the staff, Dr. Cain thanked and commended Mr. Schwartz on behalf of the IEEE Board of Directors.

Dr. Cain said Mr. Senese's appointment as General Manager concluded an eight-month search.

"The IEEE is pleased to welcome Dan Senese to the staff leadership position," Cain said. "His senior-management experience and his customer-focused contributions to AT&T and Bellcore will serve the Institute well during this time of transition and opportunity."

The IEEE has some 600 employees serving more than 315,000 members in approximately 150 countries.

Mr. Senese, who spent 27 years with AT&T and Bellcore, joined AT&T Bell Laboratories in 1968 and progressed through various technical staff and management positions. In 1984, he went on to Bellcore where he continued to serve in increasingly responsible technical and executive-level positions. He eventually became general manager for Network Product Management, where he both led an organization that managed \$350 million of the company's products and services and was primary contact for the seven largest customers.

He was named Vice President, Quality in 1993 and has since led a company-wide quality improvement program resulting in a dramatic improvement in customer satisfaction.

An IEEE Member, Dan Senese holds BS and MS degrees in Electrical Engineering from the University of Illinois, Urbane. He and his wife, Joan, have two children and live in Leonardo, NJ.

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Ron Harbaugh - Member-At-Large	352-6202
Eric Wright - Member-At-Large	881-3329
Jack Beckmeyer - Arrangements Chairman	353-2643, 353-2671 (Fax)
Bill Lohner - PACE Chairman	385-7268
Bob Morrison - Editor	287-3697 (Office), 287-3698 (Fax)

JANUARY 1996

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